

AMENDMENTS TO THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) An organic semiconductor device comprising:

an organic semiconductor layer deposited between a first electrode and a second electrode which are facing each other,

wherein the first electrode comprises a first material having a first work function and the second electrode comprises a second material having a second ~~different~~ work function, and

wherein said first work function is different from said second work function. ~~with respect to said first material.~~

2. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor layer comprises a P-type semiconductor.

3. (Currently Amended) The organic semiconductor device according to claim 2, wherein ~~the first electrode has a~~ said first ~~higher~~ work function is greater than said second work function. ~~the second electrode.~~

4. (Currently Amended) The organic semiconductor device according to claim 2, wherein ~~the first electrode has a~~ said first work function ~~that~~ is substantially equivalent to an ionization potential of the organic semiconductor layer.

5. (Currently Amended) The organic semiconductor device according to claim 4, wherein ~~the first electrode has a~~ said first work function is within a range from -1eV to +1eV with a center of the range corresponding to an ionization potential of the organic semiconductor layer.

6. (Currently Amended) The organic semiconductor device according to claim 4, ~~the first electrode has a~~ said first work function is within a range from -0.5eV to +0.5eV with a center of the range corresponding to an ionization potential of the organic semiconductor layer.

7. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor layer comprises an N-type semiconductor.

8. (Currently Amended) The organic semiconductor device according to claim 7, wherein ~~the first electrode has a lower~~ said first work function is lower than ~~the~~ said second work function. electrode.

9. (Currently Amended) The organic semiconductor device according to claim 8, wherein ~~the first electrode has a~~ said first work function ~~that~~ is substantially equivalent to an electron affinity of the organic semiconductor layer.

10. (Currently Amended) The organic semiconductor device according to claim 9, wherein ~~the first electrode has a~~ said first work function is within a range from -1eV to +1eV with a center of the range corresponding to an electron affinity of the organic semiconductor layer.

11. (Currently Amended) The organic semiconductor device according to claim 9, wherein ~~the first electrode has a~~ said first work function is within a range from -0.5eV to $+0.5\text{eV}$ with a center of the range corresponding to an electron affinity of the organic semiconductor layer.

12. (Previously Presented) The organic semiconductor device according to claim 1, wherein the first electrode and the second electrode comprise a source electrode and a drain electrode, wherein the organic semiconductor layer is deposited such that a channel is formed between the source electrode and drain electrode, and

wherein the organic semiconductor device further comprises:

a gate electrode which applies a voltage to the organic semiconductor layer provided between the source electrode and the drain electrode.

13. (Previously Presented) The organic semiconductor device according to claim 12, wherein the device comprises a gate insulator layer which electrically insulates the gate electrode from the source electrode and the drain electrode.

14. (Previously Presented) The organic semiconductor device according to claim 13, wherein the source electrode and the drain electrode are both provided on one side of the organic semiconductor layer.

15. (Previously Presented) The organic semiconductor device according to claim 13, wherein the source electrode and the drain electrode are respectively provided on opposite sides of the organic semiconductor layer with respect to each other so as to sandwich the organic semiconductor layer therebetween.

16. (Previously Presented) The organic semiconductor device according to claim 1, wherein the first electrode and the second electrode comprise a source electrode and a drain electrode,

wherein the organic semiconductor layer is deposited in a layer thickness direction such that the source electrode and the drain electrode sandwich the organic semiconductor layer therebetween, and

wherein the organic semiconductor device comprises a gate electrode which is implanted within the organic semiconductor layer.

17. (Previously Presented) The organic semiconductor device according to claim 16, wherein the gate electrode implanted within the organic semiconductor layer comprises at least one of a lattice shape, a comb shape, and a rattan blind shape.

18. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor layer comprises a material having a hole carrier mobility.

19. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor layer comprises at least one of pentacene, anthracene and tetracene.

20. (Previously Presented) The organic semiconductor device according to claim 1, wherein the first electrode and the second electrode each contact the organic semiconductor layer.

21. (Previously Presented) The organic semiconductor device according to claim 1, wherein

the organic semiconductor device comprises a bottom-contact organic transistor.

22. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor device comprises a top-contact organic transistor.

23. (Previously Presented) The organic semiconductor device according to claim 1, wherein the organic semiconductor layer comprises an organic material that transports electrons when a voltage is applied to the organic semiconductor layer.

24. (Previously Presented) The organic semiconductor device according to claim 1, further comprising:

a gate electrode for applying a voltage to the organic semiconductor layer.

25. (Previously Presented) The organic semiconductor device according to claim 24, wherein the gate electrode comprises at least one of Al, Cu, Ni, Cr, and alloys thereof.

26. (Previously Presented) The organic semiconductor device according to claim 1, wherein the first electrode comprises a source electrode and the second electrode comprises a drain electrode.

27. (Currently Amended) The organic semiconductor device according to claim 26, wherein ~~the source electrode comprises a higher~~ said first work function is greater than said second work function. ~~the drain electrode.~~

28. (Previously Presented) The organic semiconductor device according to claim 26, wherein the source electrode comprises at least one of Au, Rh, Ir, Ni, As, Te, Pt, Pd, Cr, Se, Ni, indium tin oxide, indium zinc oxide, zinc oxide, stannic oxide, copper iodide and alloys thereof, and poly(3-methylthiophene), polyphenylene sulfide, polyaniline.

29. (Previously Presented) The organic semiconductor device according to claim 26, wherein the drain electrode comprises at least one of plumbum, stannum, aluminum, calcium, indium, lithium, magnesium and alloys thereof.

30. (Currently Amended) A bottom-contact organic transistor, comprising:

an organic semiconductor layer deposited between a first electrode and a second electrode which are facing each other,

wherein the first electrode comprises a first material having a first work function and the second electrode comprises a second material having a second ~~different~~ work function, and

wherein said first work function is different from said second work function. ~~with respect to said first material.~~

31. (Canceled).